

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended) A defect-inspecting apparatus comprising:

a stage on which an object to be inspected is mounted;

an illumination optical system comprising:

a high-angle illumination system which illuminates light on a surface of the object to be inspected with desired luminous flux from a high-angle relative to the surface of the object; and

a low-angle illumination system which illuminates light on the surface of the object to be inspected with desired luminous flux from a low-angle relative to said high-angle illumination system;

a detection optical system comprising:

~~an image formation~~ a condensing optical system which condenses light scattered from the surface of the object by the illumination of the high-angle illumination system and/or ~~said~~ the low-angle illumination system; and

~~a detector~~ light receiving optical unit which detects the scattered light condensed ~~from~~ by said ~~image formation~~ condensing optical system and converts the detected light into a first signal corresponding to said light illuminated by said high-angle illumination optical system

and/or a second signal corresponding to said light illuminated by said
low-angle illumination optical system; and

a comparison and judgment unit which classifies defects on the object to be
inspected into scratches, thin film-like foreign materials ~~and/or~~ convex defects by
using the first signal and/or the second signal, which have been converted by the
~~photoelectric conversion unit~~ light receiving optical unit of the detection optical
system;

wherein the comparison and judgment unit is configured to classify foreign
materials, which are convex defects, into a small group and a large group on a basis
of data in response to a defect size calculated from the first signal and the second
signal.

Claim 2 (Previously Presented) A defect-inspecting apparatus according to
Claim 1, wherein:

the high-angle illumination system of the illumination optical system is
configured so that stray light is not generated from the image information optical
system.

Claim 3 (Previously Presented) A defect-inspecting apparatus according to
Claim 1, wherein:

the detection optical system comprises a shielding optical element which
shields a specific light image, which is caused by first reflection light generated from
a point high-angle incident-illuminated by the high-angle illumination system, on a
Fourier transformed surface of the first reflection light emitted from the point.

Claim 4 (Currently Amended) A defect-inspecting apparatus according to

Claim 1, wherein:

in the comparison and judgment unit, correlation between the first signal and the second signal is used to classify the defects into the scratches, the thin film-like foreign materials ~~and~~ or the convex defects.

Claim 5 (Currently Amended) A defect-inspecting apparatus according to

Claim 1, wherein:

the comparison and judgment unit is configured to classify concave defects into scratches and thin film-like foreign materials on a basis of data in response to a defect size calculated ~~by~~ from the first signal and the second signal.

Claim 6 (Cancelled)

Claim 7 (Previously Presented) A defect-inspecting apparatus according to

Claim 1, wherein:

the comparison and judgment unit is configured to judge that a classified convex defect occurs inside a circuit pattern area, or that the classified convex defect occurs outside the circuit pattern area.

Claim 8 (Previously Presented) A defect-inspecting apparatus according to

Claim 1, wherein:

the comparison and judgment unit has a displaying unit which displays information of defects classified by the comparison and judgment unit.

Claim 9 (Previously Presented) A defect-inspecting apparatus according to Claim 1, wherein:

the comparison and judgment unit has a displaying unit which displays information about a relation of the first signal to classified defects.

Claim 10 (Previously Presented) A defect-inspecting apparatus according to Claim 1, wherein:

the comparison and judgment unit has a displaying unit for displaying information about a relation of the second signal to discriminate a defect.

Claim 11 (Currently Amended) A defect-inspecting apparatus according to Claim 1, wherein:

the comparison and judgment unit has a displaying unit for plotting a relation between the first signal and the second signal, which have been converted by the ~~detector~~light receiving optical unit of the detection optical system, on a correlation diagram, where a horizontal axis and a vertical axis are expressed by logarithm values, to display the relation.

Claim 12 (Previously Presented) A defect-inspecting apparatus according to Claim 1, wherein:

in the illumination optical system, a point incident-illuminated by the high-angle illumination system and a point oblique-illuminated by the low-angle illumination system, which are on the surface of the object to be inspected, are

configured to be different from each other in a visual field of the detection optical system.

Claim 13 (Currently Amended) A defect-inspecting apparatus comprising:

a stage on which an object to be inspected is mounted;

an illumination optical system comprising;

a high-angle illumination system that illuminates with light including UV light or DUV light at a point on a surface of the object to be inspected, which is mounted on the stage, with desired luminous flux from a high angle direction relative to the surface ; and

a low-angle illumination system that illuminates light including UV light or DUV light, ~~which has a wavelength different from that of said high-angle illumination light,~~ at a point on the surface of the object to be inspected with desired luminous flux;

a detection optical system comprising;

a condensing optical system which condenses first scattered light ~~from among first reflection light~~ generated from the point, which has been illuminated by the high-angle illumination system of the illumination optical system, and second scattered light from among second reflection light generated from the point, which has been illuminated by the low-angle illumination system of the illumination optical system; and

~~an image formation optical system which performs image formation of each of the first high-angle scattered light and the second high-angle scattered light; and~~

~~a first and a second photoelectric conversion unit which receives a light receiving optical unit which detects the each of the first high-angle scattered light and the second high-angle scattered light, for which image formation has been performed by the image formation optical system, condensed by the condensing optical system to convert the each of the first high-angle scattered light and the second high-angle scattered light into a first signal and a second signal respectively; and~~

~~a comparison and judgment unit which discriminates a defect classifies defects on the object to be inspected into concave defects or convex defects on a basis of a relation correlation between the first signal converted by the first photoelectric conversion means and the second signal which have been converted by the second photoelectric conversion means light receiving optical unit in the detection optical system;~~

~~wherein the comparison and judgment unit is configured to classify particulate foreign materials, which are the convex defects, into a small group and a large group on a basis of data in response to a defect size calculated from the first and the second signal.~~

Claim 14 (Currently Amended) A defect-inspecting apparatus according to Claim 13, wherein:

the ~~incident~~high-angle illumination system of the illumination optical system is configured so that stray light is not generated from the ~~high-angle~~ condensing optical system.

Claim 15 (Currently Amended) A defect-inspecting apparatus according to Claim 13, wherein:

the detection optical system comprises a shielding element which shields a specific light image, which is caused by the first reflection light, on a Fourier transformed surface of the first reflection light emitted from the point.

Claim 16 (Previously Presented) A defect-inspecting apparatus according to Claim 13, wherein:

in the comparison and judgment unit, ratios are used as the correlation.

Claim 17 (Currently Amended) A defect-inspecting apparatus according to Claim 13, wherein:

the comparison and judgment unit is configured to classify the concave defects into scratches and thin film-like foreign materials on a basis of data in response to a defect size calculated ~~by~~from the first signal and the second signal.

Claim 18 (Cancelled)

Claim 19 (Previously Presented) A defect-inspecting apparatus according to Claim 13, wherein:

the comparison and judgment unit is configured to judge that the classified convex defect occurs inside a circuit pattern area, or that the classified convex defect occurs outside the circuit pattern area.

Claim 20 (Currently Amended) A defect-inspecting apparatus according to Claim 13, wherein:

the comparison and judgment unit has an displaying means for displaying information of a ~~discriminated~~classified defect.

Claim 21 (Previously Presented) A defect-inspecting apparatus according to Claim 13, wherein:

the comparison and judgment unit has a displaying means for displaying information about a relation of the first signal to discriminate a defect.

Claim 22 (Previously Presented) A defect-inspecting apparatus according to Claim 13, wherein:

the comparison and judgment unit has a displaying means for displaying information about a relation of the second signal to discriminate a defect.

Claim 23 (Currently Amended) A defect-inspecting apparatus according to Claim 13, wherein:

the comparison and judgment unit has a displaying means for plotting a relation between the first signal and the second signal, which have been converted by the ~~photoelectric conversion means~~light receiving optical unit of the detection

optical system, on a correlation diagram, where a horizontal axis and a vertical axis are expressed by logarithm values, to display the relation.

Claims 24 and 25 (Cancelled)

Claim 26 (Currently Amended) A defect-inspecting method comprising:

high-angle illuminating light onto a surface of an object to be inspected with desired luminous flux from a high-angle relative to the surface of the object; and

low-angle illuminating light onto the surface of the object to be inspected with desired luminous flux from a low-angle relative to said high-angle illuminating;

detecting by:

condensing light scattered from the surface of the object by the illumination of the high-angle illuminating and/or the low-angle illuminating; and

receiving the ~~detected~~condensed light from the condensing, and converting the ~~detected~~condensed light into a first signal corresponding to said light illuminated by said high-angle illuminating and/or a second signal corresponding to said light illuminated by said low-angle illuminating; and

comparing and judging to classify defects on the object to be inspected into scratches, thin film-like foreign materials ~~and~~or convex defects by using the first signal and/or the second signal, which have been converted by the converting operation;

wherein the comparing the judging operation includes to classify foreign materials, which are convex defects, into a small group and a large group on a basis of data in response to a defect size calculated from the first signal and the second signal.

Claim 27 (Currently Amended) A defect-inspecting method comprising:

an illumination step for

high-angle illuminating illumination light including UV light or DUV light at a point on a surface of an object to be inspected, which is mounted on a stage, with desired luminous flux from a high-angle direction relative to the surface, by using ~~ana~~ high-angle-illuminating system; and

low-angle illuminating illumination light including UV light or DUV light, ~~which has a wavelength different from that of said high-angle illumination light,~~ at a point on the surface of the object to be inspected with desired luminous flux using a low-angle-illuminating system;

a detection step for

condensing first scattered light ~~from among first reflection light~~ generated from the point, which has been illuminated by the high-angle illuminating step, and second scattered light ~~from among second reflection light~~ generated from the point, which has been illuminated by the low-angle-illuminating step, by using a condensing optical system; and

~~performing image formation for each of the first high-angle scattered light and the second high-angle scattered light; and~~

receiving each of the first high-angle scattered light and the second high-angle scattered light, ~~for which image formation has been performed, by~~ using a first ~~and a second photoelectric conversion means~~ light receiving optical unit to convert the first high-angle scattered light and the second high-angle scattered light into a first signal and a second signal respectively; and

a comparison and judgment step for discriminating ~~a defect~~ classifying defects on the object to be inspected into concave defects or convex defects on a basis of a correlation between the first signal and the second signal converted by the detection step ~~and the second signal converted by the second photoelectric conversion means;~~

wherein the comparison and judgment step includes a step for classifying particulate foreign materials, which are the convex defects, into a small group and a large group on a basis of data in response to a defect size calculated from the first and the second signal.

Claim 28 (Canceled)

Claim 29 (Currently Amended) A method for producing a semiconductor device comprising:

a fabrication process for polishing, washing, or sputtering an object surface of a semiconductor device;

a defect inspection process including:

high-angle illuminating light onto a surface of an object to be inspected with desired luminous flux from a high-angle relative to the surface of the object; and

low-angle illuminating light onto the surface of the object to be inspected with desired luminous flux from a low-angle relative to said high-angle illuminating;

detecting by:

condensing light scattered from the surface of the object by the illumination of the high-angle illuminating and/or the low-angle illuminating; and

receiving the ~~detected~~condensed light from the condensing, and converting the ~~detected~~condensed light into a first signal corresponding to said light illuminated by said high-angle illuminating and/or a second signal corresponding to said light illuminated by said low-angle illuminating; and

comparing and judging to classify defects on the object to be inspected into scratches, thin film-like foreign materials ~~and/or~~ convex defects by using the first signal and/or the second signal, which have been converted by the converting operation; and

~~supplying the fabrication process with information of the scratches, thin film-like foreign materials and convex defects, which have been judged in the defect inspection process, as feedback~~wherein the comparing and judging operation includes to classify foreign materials, which are convex defects, into a small group

and a large group on a basis of data in response to a defect size calculated from the
first signal and the second signal.

Claims 30-31 (Cancelled)